

At a Meeting of the Council
of the R. Society.

January 21. 167 $\frac{4}{5}$.

Order'd,

THAT a Discourse made
before the R. Society,
Decemb. 10. 1674. by Dr. Ne-
hemiah Grew, Concerning the
Nature, Causes, and Power of
Mixture, &c. be Printed by the
Printer of the R. Society.

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Ex
A *J. D. Dorafton's*
DISCOURSE 1790

Made before the *pro. 1790.*

ROYAL SOCIETY,

Decemb. 10. 1674.

Concerning the

Nature, Causes, and Power of

MIXTURE.

By *Nehemiah Grew*, M. D. and
Fellow of the R. Society.

L L O N D O N,

Printed for *John Martyn*, Printer
to the Royal Society, and are
to be Sold at the Bell in St.
Pauls Church-yard; 1675.

Dec. 1910

23313



To the Right Honourable
W I L L I A M
Lord Viscount
BROUNCKER,
PRESIDENT of the
ROYAL SOCIETY.

My Lord,



N E Reason
why I dedi-
cate the fol-
low-

The Epistle
lowing Discourse to
Your Lordship , is
because by Your great
and undeserved re-
spects , You have ob-
liged me to do no
less. How much more
I cannot say , unless
I were able to com-
pute the value of
Your obligation.

Another Reason ,
my Lord , is be-
cause I could not
but

Dedicatory.

but publickly return
Your Lordship thanks,
for minding the Royal
Society of so good
a way, as they are
lately resolved upon,
for the management
of a great part of
their business. Where-
in, my Lord, I do
more then presume,
that I also speak the
sense of the whole
Society; I think,
not

The Epistle
not any one except-
ed.

*I may with the
same confidence inti-
mate, my Lord, how
happy they account
themselves, in having
a Person so fit to
preside their Affairs,
as Your Lordship.
The largeness of Your
Knowledge, the ex-
actness of Your Judg-
ment, the evenness
of*

Dedictory.

of Your Comport ;
being some of those
necessary Qualificati-
ons, which His Ma-
jesty had in His eye,
(as right well un-
derstanding what He
did) when He fixed
His choice upon Your
Lordship.

I know, my Lord,
that there are some
men, who have just
so much understand-
ing,

The Epistle

ing, ~~was~~ only to teach
them how to be am-
bitious : the flatter-
ing of whom, is some-
what like the tick-
ling of Children, till
they fall a dancing.
But I also know,
that Your Lordship
unconcerneth your self
as much, in what I
even now spake ; as
Cæsar did himself,
when his Souldiers
began

Dedicatory.

*began to style him
King. For as he
said, Non Rex, sed
Cæsar : so let Your
Lordship be but once
nam'd , and all that
follows , is but a
Tautology to what
You are already known
to be. Your being
President of the Roy-
al Society, Your be-
ing the first that was
chosen , and chosen
by*

The Epistle
by so Wise a King ;
amounteth to so high
and real a Panegy-
rick to Your Lord-
ship , as maketh ver-
bal ones to be su-
perfluous , and leaves
them without any
sound.

Whence, my Lord,
I have a third Rea-
son most naturally e-
mergent ; which is,
that I dare to sub-
mit

Dedictory.

mit my self, as to
what I have here-
after said; to Your
Lordships Censure.
You being so able,
and just an Arbiter,
betwixt the same and
all those persons there-
in concern'd; that
You can neither be
deceived, nor corrupt-
ed, to make a Judg-
ment in any Point,
to the injury of either.
And

The Epistle

And truly, my
Lord, were it only
from a principle of
self-interest, yet I could
not desire it should
be otherwise. For
the World, if it
lives, will certainly
grow as much wiser
then it is; as it is
now wiser then it
was heretofore. So
that we have as
little reason, to de-
spise

Dedictory.

spise Antiquity ; as
we can have willing-
ness , that we our
selves should be de-
spised by Posterity.

Yet some difference
there is to be made ;
viz. betwixt those of
all Ages , who have
been modestly igno-
rant ; and those who
have thought , or
pretended , that they
were Omniscient. Or
if

The Epistle

if knowing and acknowledging that they were ignorant ; have yet not been contented to be so ; unless , with as good manners , as sense , they did conjure all Mankind, not to offer at the knowing any more then themselves.

Upon the whole , my Lord , I desire not You should be

Dedicatory.

a Patron , any further then You are a Judge. For if this small Essay hath deserved the least acceptance , I am sure, that in being one, You will be both. Whereby, my Lord, You will not a little nourish and inspire my future endeavours of the like nature : being very

The Epistle, &c.
ry solicitous to ap-
prove my self,

My Lord,

Your Lordships

most faithful

and obedient

Servant,

Nehemiah Grew.



A
DISCOURSE

Made before the

ROYAL SOCIETY.

HAVING the honour to perform the task of this day ; I shall endeavour to conform to the *Philosophy*,
B which

which this Society doth profess ; which is, *Ratiocination, grounded upon Experiment, and the Common Notions of Sense.* The former being, without the latter, too subtle and intangible ; the latter, without the former, too gross and unmanageable : but both together, bearing a true analogy to our selves ; who are neither Angels , nor meer Animals, but Men.

The Subject I have chosen

sen to speak of, is *Mixture*.
Whereof, that our *Discourse* may be the more *consistent*, and the better *intelligible*; all I have to say, shall be ranged into this *Method*; *viz.*

1. First, I shall give a brief account of the received *Doctrine of Mixture*.

2: Next, lay down some *Propositions* of the *Principles* whereof all *Mixed Bodies* consist:

3. Then, open the true

B 2

Nature

*Nature of Mixture ; or say,
What it is.*

4. And then enumerate
the *Causes* of *Mixture* ; or
say, *How* it is made.

5. Lastly, I shall shew
the *Power* of *Mixture* ; or,
What it can do.

SECT. I.

FIRST, As to the re-
ceived *Doctrine* of *Mix-
ture* ; not to trouble you
with tedious quotations of
what

what *Aristotle*, *Galen*, *Fernelius*, *Scaliger*, *Sennertus*, *Riverius*, and others say hereof; we may suppose the whole summed up in that *Definition* which *Aristotle* himself hath given of it, and which the greater number of his Followers, have almost religiously adhered to; viz. that 'tis, τῶν μιχτῶν ἀλλοιωθέντων ἕνωσις. *Lib. 1. de Gener. & Corrupt. Cap. ult.* that 'tis, *Miscibilium alterato-*

rum unio. Which *Definition*, as it is usually explicated, is both *Unintelligible*, and *Unuseful*.

Two things are *unintelligible* ; what they mean by *Alteration* ; and what by *Union*. In this *Alteration*, they say, That the very *Forms* of the *Elements* are *alter'd*. And therefore lay it down for an *Axiom*, *Quod in Mixto, Formæ Elementares tantum sint in potentia*. But let us see the consequence.

quence. For if in a *mixed* body, the *Forms* of the *Elements* are but *in potentia*; then the *Elements* themselves are but *in potentia*: for we all say, *Forma dat esse*. And if the *Compound-
ing Elements*, are only *in potentia*; then the *Compound;
Body* it self can be only *in potentia*: yet to say it is no more, is most absurd.

As for the *Union* of *Elements* in a *mixed Body*; they make it such, as brings

B 4 them

them at last to assert, the
Penetration of bodies, and
 that the *Union of mixed bo-*
dies is nothing else. For
 they say, it is made in such
 sort, that every particle of
 the *mixed body*, partaketh of
 the *Nature* of the whole.
 Which *Nature*, ariseth from
 the contempered *Quali-*
ties of the four *Elements*.
 Whence they conclude,
 That every particle of the
mixed body, containeth in it
 self all the four *Elements*.
 Which

Which is plainly to assert a *penetration* of *bodies*. For every *Element* is, at least, one particle ; if therefore every particle of the mixed body, containeth four *Elements* ; then four particles, are but one. I conclude then, That the received *Doctrine* of *Mixture*, is *Unintelligible*.

Whence it follows, That it is also *Barren* and *Unuseful*. For who can make any use of that which he

understandeth not ? And the experience of so many years, wherein it hath been ventilated by the disputes of men, proveth as much : Scarce any of them, except the Learned *Sennertus*, daring to venture upon Experiment , for fear they should come to understand themselves.

It is confessed, that many gallant things have been found out by artificial *Mixture*. But no thanks to this
Defi.

Definition of it. For as an *Ignorant* Person may make bad *Work*, and a good *Rule* be never the worse ; so an *Ingenious* Person may make good *Work*, and a bad *Rule* be never the better. The question is not, what have men done ? but what have they done upon this foundation, *Quòd Mixtio sit miscibilium alteratorum unio.* Had this ever taught them to do any thing, even so much as to make the *Ink* where-

wherewith they have wrote all their *Disputes*; I confess, they would have had something to shew for it. But the truth is, their *notions* of *Mixture*, have been so far from doing us any good, that they have done us much harm : being, through their seeming subtlety, but real absurdity, as so many phantastick Spectrums, serving only to affright men from coming near them, or the Subject whereof they treat. I

I shall therefore endeavour to open the true *Nature* of *Mixture*. And I shall build my *Doctrine* upon the *Common Notions* of *Sense*: which none can *deny*; and every one may *conceive* of. In order to which, I shall take leave to lay down some *Propositions*, of the *Principles* of all *mixed bodies*.

SECT.

SECT. II.

1. **A**ND first, by *Principles*, I mean *Atomes*, or certain sorts of *Atomes*, or of the *simplest* of *Bodies*. For otherwise they would not be *Principles* ; for a *compounded Principle*, in strict speaking, is a *contradiction*. Even as *fives*, *threes*, or *twos*, are not the *Principles* of *Number*, but *Unites*.

2. Whence, secondly,
it

it follows, that they are also *Indivisible*. Not *Mathematically*; for the *Atomes* of every *Principle* have their *dimensions*. But *Physically*; and so, what is but *one*, cannot be made *two*.

If it be asked, Whether a Stick cut with a Knife, be not of one, made two? I say, that a Stick, is not *one* body, but *many millions* of bodies; that is, of *Atomes*; not any one whereof is *divided* within it self,
but

but only they are *separated* each from other, where the Knife forceth its way. As in the drawing of a mans Finger through an heap of Corn; there is no *diviston* made in any one *Grain*, but only a *separati-on* of them one from another, all remaining still in themselves entire. I say therefore, that what is *physically one*, is also most firm, and *indivisible*; that is, *impenetrable*: for *penetration* is
but

but the *separation*, not the *division* of *Atomes*.

3. Hence, thirdly, they are also *Immutable*. For that which cannot be *divided*, cannot be *chang'd*. So that of the whole World of *Atomes*, not any one hath ever suffer'd, or can suffer the least *mutation*.

Hereupon is grounded the *Constancy* of *Causes* and *Effects*. So that, in all *Generations*, it is not less certain, that the self same
Prin-

Principle is still propagated from the same ; than, that *Man* is from *Man*. Wherefore , *Compounded* bodies are generated ; but *Principles* are not, but only propagated ; that is, in every *Generation* , they pass , in themselves unaltered, from one body, into another.

4. If *Principles*, or *Atoms* are all *Immutable* ; it again follows , That they are of *divers kinds*. For one and the same *Principle*,
or

or kind of *Atomes*, will still make the same thing, and have the same effect : so that all *Generations* would then be the same. Wherefore, since they are *Immutable* , they must be *divers*.

5. This *diversity* , for the same reason , is not small, but very *numerous*. For as the *World*, taken together , is *Natures Shop* ; so the *Principles* of Things, are her *Tools*, and her *Materials*.

terials. Wherefore, as it speaks the *goodness* of a *Shop*; so the *perfection* of the *Universe*, That it is furnished with many *Tools* wherewith, and many *Materials* whereupon to *work*. And consequently, that *Philosophy* beareth best its own name; which doth not strain all to two or three *Principles*, like two or three Bells in a Steeple, making a pittiful *Chime*: but tryeth to rise up to *Natures*
own

own *number*, and so to ring all the *changes* in the world.

6. Yet doth not this vast *Diversity*, take away the *Regiment* and *Subordination*, of *Principles*. There being a certain lesser *number* of them, which either by their greater *quantity*, or other ways, have *Rule* and *Dominion*, in their several *Orders*, over all the rest. For where-ever the *Subject* is *Multitude*, *Order*
is

is part of its *Perfection*.
 For *Order* is *Proportion*.
 And how can *Nature* be
 imagin'd to hold *Proportion*
 in all things else, and
 not here ? Wherefore, as
 certainly, as *Order* and *Go-*
vernment are in all the parts
 of the *Rational* ; so certainly,
 of the *Material World*.

Whence it is, That al-
 though the *Species* of *Prin-*
ciples be very *numerous* ;
 yet the *Principles* called *Ga-*
lenical , *Chymical* , or any
 others,

others, which do any way fall under the notice of Sense, are notwithstanding *reduceable* to a *smaller number* : viz. according to the *number of Predominant Principles* in *Nature* ; or , at least, in this part of the *Universe* which is *near and round about us*. To the *Power* and *Empire* whereof, all other *Principles* do submit. Which *Submission*, is not the *quitting* of their own *Nature* ; but only their
ap-

appearance under the external Face or *Habit* of the said *Predominant Principles*.

7. As there can be no *Order of Principles*, without *Diversity* ; so no *Diversity*, but what is *originally* made by these two ways ; *sc.* by *Size* and *Figure*. By *these* they may be exceeding different ; and all other *Properties* besides , whereby they differ , must be *dependent* upon *these two*.

8. Nor

8. Nor therefore, can they be of any other *Figures*, than what are *Regular*. For *Regularity*, is a *Similitude continu'd*. Since therefore all kinds of *Atomes* are *divers* only by their *Size* and *Figure*; if the self same *Size* and *Figure* were not *common* to a certain number of *Atomes*, they could not be said to be of any *one kind*: and consequently, if there were no *Similitude* of *Atomes*,
 . C. there

there could be no *Distinction* of *Principles*.

9. Hence also , these two *Modes* of *Atomes*, viz. their *Size* and *Figure*, are the true, and only *original Qualities* of *Atomes*. That is, an *Atome* is *such* or *such*, because it is of such a certain *Size* and *Figure*.

10. Lastly , As these two *Modes*, taken severally, are the *Qualities* of an *Atome* : so consider'd together , they are its *Form*.

A *substantial Form* of a *Body*, being an unintelligible thing. I say of a *Body*; for although the *Rational Soul* be a *substantial Form*, yet is it the *Form* of a *Man*, and not of a *Body*. For the *Form* of a *Body*, we can conceive of no otherwise, then as of the *Modification* of a *Body*, or a *Complexion* of all the *Modes* of a *Body*. Which also agrees with that *Definition* of a *Form*, which amongst the

Peripatetick Philosophers is well enough accepted, viz. *Quod sit, Ratio ejus Essentia, quæ cuique Rei competit.* Which *Ratio*, if it be referred to a *Body*, what is it but the *Modification* of that *Body*? Having thus proposed a Summary of my *Thoughts* about *Principles*; I shall next proceed to shew what their *Mixture* is.

SECT.

S E C T. III.

AND first of all, from the *Premisses*, we arrive at this *Conclusion* ; *sc.* That the *Formation* and *Transformation* of all Bodies, can be nothing else , but the *Mixture* of Bodies. For all *Principles* are *immutable*; as we have above proved : and therefore not *generable*, *formable*, or *transformable*. And the *Forms* of

Principles, being but their *Modes*, are also *immutable*. So that the whole *Business* of the *Material World*, is nothing else , but *Mixture*.

Again, as *Nature* worketh every where only by *Mixture* ; so is this *Mixture* every where but *one thing*, and can be but *one*. For whether it be the *Mixture* of *great Bodies*, or of *small* ; of *Compounds*, or of *Atomes* ; it is every where *Mixture*,
and

and the *Mixture* of *Bodies*.
 Wherefore, *Mixture* is ei-
 ther an *intelligible Affection*
 of *all* *Bodies*, or of *none* ;
 which latter, no man will
 say. As many wayes,
 therefore , as we can see,
 or conceive the *Mixture* of
 any *gross* *Bodies*, which we
 hold in our hand ; so ma-
 ny ways, we may, of the
subtilest Mixtures which *Na-*
tare maketh, or of *Atomes*
 themselves ; and no other
 wayes.

Now all the wayes we can distinguish *Mixture* by, are in general these *two* ; either in respect of the *Bodies Mixed*, or else of the *Modes* of the *Mixture* it self.

In respect of the *Bodies Mixed*, *Mixture* is distinguished also *two* ways ; viz. by *Conjugation*, and by *Proportion*.

By *Conjugation*, I mean, a *Certain Mixture* of *some such Principles* , and not of *others*.

others. Which is *three-fold*.

First, As to *Number* : as when one Body may be compounded of *two Principles*, another of *three*, a third of *four*, a fourth of *five*, and so on.

Secondly, As to *Kind* : where, though there be a conjunction of the same *Number*, yet not of the same *Kind*.

Thirdly, When they differ from one another both

in *Number* and *Kind*.

So many ways the *Principles* of Bodies may be conceived to be *Conjugated*; and therefore are : for here, that which *may* be, *is*. The Consequence is clear. For *first*, *Nature* hath various *Materials* wherewith to make these *Mixtures* ; as we have shew'd. *Secondly* , By these *Mixtures* she *may*, and without the concurrence of any imaginary *Forms*,
must

must produce all the varieties in the *material world* ; as likewise hath been said. Wherefore, since all imaginable *Mixtures* may be made, and that to *some purpose* ; if they should not be so, *Nature* would be *Imperfect* : because we our selves can think, how she might put her *Materials* to further use , then so she would do.

To think , therefore, that all *kinds* of *Principles*,
or

or all *Elements* go to make up every *Compounded Body*; is a conceit, no more to be credited, then one that should tell us, all *kind* of *Wheels* and other *parts* of a *Watch*, were put into a *Clock*; or that there were no other *Materials* wherewith to build an *House*, then for a *Tent* or a *Ship*. For why should *Nature*, the great *Artificer* by which all *perfect Works* are made, be feigned to cram and
 ram

ram *all things into one*,
which we our selves look
upon as absurd ?

Secondly, The Mixture
of *Principles* is diversifi'd,
as by *Conjugation*, so also
by *Proportion*. That is,
by the divers *Quantities*, of
the several *Principles* or
Parts mixed together.

As if the *quantity* of
one, were as *five* to *ten*;
of a second, as *five* to *fif-*
teen ; of a third, as *five*
to *twenty*, &c.

Or if that of one, be as *five* to *six* ; of a second, as *six* to *seven* ; of a third , as *seven* to *eight*. By which, and by other *Proportions*, *Mixture* may be varied innumerable ways.

Again , As *Mixture* is varied with respect to the *Bodies Mixed* ; so likewise in respect of the *Mixture* it self, which I call the *Location* of *Principles*, or the *Modes* of their *Conjunction*. Which may be various,
as

as well as their *Conjugation* and *Proportion*. Yet are they all reduceable unto two general *Modes* : all *Bodies* , and therefore all *Principles* , being *Mixed*, either by *Mediation*, or by *Contact*.

Now all *Contact* , whether of *Compounds* , or of *Atomes* , can be no other way, then such as is answerable to their *Figures*. Whereof , therefore , we can conceive but three general ways, viz. *First*,

First , By *Contact* in a *Point*, or some *smaller part* : as when *two Atomes* meet, which are *globular* or otherwise *gibbose*.

Secondly , By *Contact* in a *Plain* : as in the conjunction of the *sides* of *Triangular* or *Quadrangular Atomes*, or otherwise *flat*.

Thirdly, By *Contact* in a *Concave* : as when one *Atome* is admitted into the *Concave* or *hole* of another ; as a *Spigot* is into a *Fosset*. The

The *first* may be called, *Apposition* ; the *second*, *Application* ; the *third* , *Reception* or *Intrusion*.

In the *two last* wayes, *Atomes* may be joyned by *Mediation* ; but best of all the *last*. As when the *two extreames* of one *Atome* are received into the *Concaves* or the *holes* of two others.

And these are all the *general* ways, whereby we can conceive Bodies to be
Mixed

Mixed together ; *sc.* by their various *Conjugation* , *Proportion*, and *Location*.

So that the *Composition* of *Atomes* , in *Bodies* ; is like that of *Letters* , in *Words*. What a Thunder-clap would such a *Word* be, as wherein all the four and twenty *Letters* were pack'd up ? One therefore is compounded of more, another of fewer ; this of some, and that of others : and both the *Conjugation*, *Proportion*-

portion , and *Location* of *Letters* is varied in every *Word* : whereby, we have many thousands of *differing Words*, without any *alteration* at all, in the *Letters themselves* ; and might have ten times as many more. In like manner, therefore, or in the self same analogous way, as the *Letters* of the *Alphabet* , are the *Principles of Words* ; so *Principles*, are the *Alphabet* of *Things*.

What

What we have said of *Principles* ; and of *Mixture* as consequent thereupon ; may be a *foundation* for an *intelligible* account, of the *Nature* and *Cause* of most of the *Intrinsick Properties*, and *Qualities* of *Bodies* : as of *Gravity*, *Levity*, *Fixity*, *Fluidity*, *Angularity*, *Roundness*, *Heat*, *Cold*, *Blackness*, *Whiteness*, *Sowerness*, *Sweetness*, *Fragrancy*, *Fetidness*, and very many more. I say an *intelligible* account ;
sc.

sc. such as is grounded upon the *Notions* of *Sense*, and made out *Mechanically*. But the exemplification hereof, being too large a field for this, or any one *Lecture*, I shall, before I come to the *Causes* of *Mixture*, only deduce from the *Premisses*, these following *Córollaries*.

1. *First*, That there is no *alteration* of *Principles* or of *Elements*, in the most perfect *Mixture* of *Bodies*.

It

It *cannot* be ; for *Principles* are *Immutable*, as we have said. And if it could be, yet it *needeth not* to be : for they are also *many*, and *compoundable infinite* ways ; as hath been shewed. So that we have no need to perplex our selves with any of those difficulties, that arise from the *Doctrine* of the *Alteration* of *Elements*. The ground of which conceit, is that, of there being but four *Elements*, and that

that all the *Elements* must needs be in every *Body*. And so men being puzzled, how from thence to make out the infinite *variety* of *Bodies*, they feigned them to be alterable, and *alter'd*, upon every *perfect Mixture*. Not considering, that if their four *Elements* be *alterable*; as few as they are, no fewer then *three* of them may be spared: for *one Element*, if *alterable*, may be made *any*.

2. Hence,

2. Hence, *secondly*, may be solved that great *Dispute*, Whether such as we call *Lixivial Salts*, are *made* by the *fire* ?

For *first*, No *Principle* is *made* by the *fire* : all *Principles* being *unalterable*; and therefore *unmakeable*.

Secondly, We must therefore distinguish betwixt the *Principle*, and the *Modification* of a *Principle* ; or its various *Mixture* with
other

other *Principles*, whence it may receive a various *denomination*.

Wherefore, a *Lixivial Salt*, *qua Lixivial*, is certainly made by the *fire*. But *quatenus Salt*, it is not: that *Principle* being *extractable* out of most Bodies ; and by *divers* other *ways*, then by the *fire*. For whether you *Calcine* a body, or *Ferment* it, (after the manner shew'd by the *diligent* and *curious Improver* of *Chymical* Knowledg, Dr.

D

Daniel

Daniel Coxe) or else *putrifie*
 it under ground, or *drown*
 it in the Sea; it still yield-
 eth *some kind of Salt*. All
 which *Salts* are *made*, not by
making the *Saline Principle*;
 but only by its being *vari-*
ously Mixed, upon those va-
 rious ways of the *Solution* of
 Bodies, with other *Princi-*
ples: from which its *various*
Mixture, it receives the *vari-*
ous Denominations, of *Marine*,
Nitrous, *Volatile*, or *Lixivial*.

3. Hence, *thirdly*, the most
perfect

perfect Mixture of Bodies, can go no higher then *Contact*. For all *Principles* are *unalterable*; and all *Matter* is *impenetrable*; as hath been said. In the most *visible* and *laxe Mixture*, there is *Contact*; and in the most *subtile* and *perfect*, as in *Generation* it self, there is *nothing more*.

4. Hence, *fourthly*, we easily understand, how divers of the same *Principles*, belonging both to *Vegetables* and many *other Bodies*, are

D 2 also

also *actually* existent in the Body of *Man*. Because even in *Generation*, or *Transmutation*, the *Principles* which are translated from one body to another, as from a *Vegetable* to an *Animal*, are not in the least *alter'd* in themselves ; but only their *Mixture*, that is, their *Conjugation*, *Proportion*, and *Location*, is *varied*.

5. Hence also the difference of *Mixture* , arising from the difference of *Contact*, is intelligible ; *sc.* as to those

those three degrees, *Congregation, Union, and Concentration.*

Congregation, and Inconsistent Mixture, is when the several *Atomes* touch but in a *Point*, or *smaller part*. In *which* manner, I have divers arguments, inducing me to believe the *Atomes* of all *Fluid Bodies, qua Fluid*, do touch; and in *no other*.

Union, is when they touch in a *Plain*. As in the *Crystals* and *Shootings* of all *Salts*, and *other* like *Bodies*. For if

we pursue their divided, and subdivided parts, with our eye, as far as we can ; they still *terminate*, on every side, in *Plains*. Wherefore, 'tis intelligible, That their very *Atomes* do also *terminate*, and therefore *touch*, in *Plain*.

Concentration, is when two, or more *Atomes* touch by *Reception* and *Intrusion* of one into another : which is the *closest*, and *firmest* *Mixture* of all ; as in any *fixed*,

un-

unodorable, or untastable body : the *Atomes* of such bodies, being not able to make any *Smell* or *Tast*, unless they were first *dissolved*; that is to say, *unpin'd* one from another.

6. Hence, *sixthly*, we understand, how in some cases, there seemeth to be a *Penetration* of *Bodies*; and in what *sense* it may be admitted : *viz.* if we will mean no more by *Penetration*, but *Intrusion*. For the *Intrusion* of one *A-*

come into the *Concave* or *hole* of another, is a *kind* of *Penetration*; whereby they take up less room in the *mixed* Body, then they would do by any other way of *Contact*. As a naked knife and its sheath, take up almost double room, to what they do , when the knife is sheathed.

Whence we may assign the *reason*, Why many *Liquors* being *mixed* ; take up less room or space, then they did
apart ;

apart; as the very *Ingenious* M. *Hook* maketh it to appear by *Experiment* that they do. I say the plain *reason* hereof, or at least one reason, is the *Intrusion* of many of their *Atomes* one into another. Which yet is not a *Penetration* of Bodies strictly so called.

7. If all that *Nature* maketh, be but *Mixture*; and all this *Mixture* be but *Contact*: 'tis then evident, That *Natural* and *Artificial* Mixture,

D 5 are

are the *same*. And all those *seeming subtilties* whereby *Philosophers* have gone about to *distinguish* them ; have been but so many *Scarcrows*, to affright *Men* from the *Imitation of Nature*.

8. *Lastly*, Hence it follows, That *Art* it self may go far in doing what *Nature* doth. And who can say, how far ? For we have nothing to *Make* ; but only to *Mix* those *Materials*, which are already *made* to our hands.

hands. Even *Nature* her self, as hath been said, *Maketh* nothing *new*; but only *Mixeth* all things. So far, therefore, as we can govern *Mixture*, we may do what *Nature* doth.

Which, that we may still the better understand; let us before, and in the next place, see the *Causes* of *Mixture*. For since *Natural* and *Artificial* *Mixture* are the same; the *immediate Causes* of both, are and must be the same.

SECT.

SECT. IV.

NOW all the *Causes* of *Mixture* we can conceive of, must, I think, be reduced to these *six* in general; viz. *Congruity, Weight, Compression, Solution, Digestion, and Agitation.*

I. *Congruity*, or aptitude and *responddence* betwixt the *Sizes* and *Figures* of *parts* to be *mixed* : whereby bodies may be truly called the *Instrumental Causes* of their
own

own Mixture. As when a *plain* answers to a *plain*, a *square* to a *square*, a *convex* to a *concave*, or a *less* to a *greater* or an *equal*, &c. according to which *Respondencies* in the *parts* of Bodies, they are more or less easily *minglable*.

2. *Weight*; by means whereof, all *Fluid* Bodies, upon supposition of the *Congruity* of their parts, must unavoidably *mingle*

3. *Compression*; which either
by

by the *Air*, or any other body, added to *Weight*, must, in some degree, further *Mixture*. Because, that *Weight* it self is but *Pression*.

For further proof of all the said *Causes*, I made this *Experiment*: Let *Oyl* of *Anise-seeds*, and *Oyl* of *Vitriol* be put apart into the *Receiver* of an *Air-Pump*. And, having exhausted it of the *Air*, let the two said *Oyls* be then affused one upon the other. Whereupon

First,

First, It is visible, that they here *mix* and *coagulate* together ; that is, their parts are *wedged* and *intruded* one into another, without the *usual* compression of the *Air* ; for that is *exhausted* : and therefore only, by the *Congruity* of their receiving and intruding parts ; and by their *Weight* ; by *which* alone they are so *compressed*, as to make that *Intrusion*.

Secondly, It is also evident, That although they do Co-
agu-

agulate ; yet not altogether so much, as when powred together in the same manner, and quantity, in the open Air. Wherefore, *Compression*, whether made by the Air, or any thing else, doth somewhat further the *Mixture* of Bodies, and the greater the *Compression*, the more.

4. *Solution*; For all bodies mix best, in *Forma fluida*. And that for two reasons.

First, Because the *parts* of a body are not then in a
state

state of Union, but of *Separation*; and therefore, in a more capable *state*, for their *Mixture* and *Union* with the parts of *another* body.

Secondly, Because then they are also in a *state of Motion*, more or less; and therefore, in a continual tendency towards *Mixture*; all *Mixture* being made by *Motion*.

Wherefore, all *Generations*, and most perfect *Mixtures* in *Nature*, are made by *Fluids*; whether *Animal*, *Vegetable*, or
Mi-

Mineral. Which is also agreeable to the *Doctrine* of the *Honourable Mr. Boyle*, in his excellent *Treatise* of the *Nature and Vertues* of *Gems*.

And 'tis well known, That bodies are ordinarily petrified, or *Stones* made, out of *Water*. That is, out of petrifying parts dissolved per minima in *Water*, as both their *Menstruum* and their *Vehicle*. Wherefore, if we will talk of making *Gold*; It must not be by the *Philosophers Stone*,
but

but by the Philosophers
Liquor.

5. *Digestion.* For which
there is the same reason, as
for *Mixture*, by *Solution*. For

First, All heat doth *attenuate*, that is, still further *separate* the *parts* of a body; and
so render them more *mingleable* with the *parts* of *another*. And therefore

Secondly, Doth also add
more *Motion* to them, in order
to their *Mixture*.

6. *Agitation.* Which I am
in-

induced to believe a great and effectual means of *Mixture*, upon divers considerations. As

First, That the *making* of *Blood* in the *Bodies* of *Animals*, and the *mixing* of the *Chyle* therewith, is very much promoted by the same means ; *ſc.* by the *Agitation* of the parts of the *Blood* and *Chyle*, in their continual *Circulation*.

Again, From the *making* of *Butter* out of *Milk*, by the same

same means:whereby alone is made a *separation* of the oleous parts from the whey, and a *mixture* of them together.

Moreover, From the great *Effects* of *Digestion*; well known to all that are conversant in *Chymical Preparations*. Which *Digestion* it self, is but a *kind* of *insensible Agitation* of the *parts* of *digested* bodies.

'Tis *also* a known *Experiment*, That the readiest way
to

to dissolve *Sugar* in *Wine* or other *Liquor*; is to give the *Vessel* a *hasty turn*, together with a *smart knock*, against any *hard* and *steady* body: whereby all the parts of the *Sugar* and *Liquor*, are put into a *vehement Agitation*, and so immediately mixed together.

And I remember, that having (with intent to make *Mr. Mathews's Pill*) put some *Oyl of Turpentine* and *Salt of Tartar* together in a bottle,
and

and sent it up hither out of the *Country*; I found, that the continual *Agitation* upon the *Road*, for three or four days, had done more towards their *Mixture*; then a far greater time of *Digestion* alone had done before. And it is certain, That a vehement *Agitation*, especially if continu'd, or joyned with *Digestion*; will accelerate the *Mixture* of some bodies, ten times more, then any bare *Digestion* alone; as may be proved

proved by many *Experiments*.

I will instance in this one. Let some *Oyl* of *Turpentine* and good *Spirit* of *Nitre* be stop'd up together in a bottle, and the bottle held to the fire, till the *Liquors* be a little heated, and begin to bubble. Then having removed it, and the Bubbles by degrees increasing more and more ; the two *Liquors* will of themselves , at last fall into so impetuous an
Ebul-

Ebullition, as to make a kind of *explosion* ; sending forth a *smoak* for the space of almost *two yards* high. Whereupon, the *parts* of both the *Liquors*, being violently *agitated*, they are, in a *great portion*, *incorporated* into a *thick Balsam* in a *moment* : and that without any *intense* heat, as may be felt by the bottle. And thus much for the *Causes* of *Mixture*.

S E C T. V.

HAVING enumerated the *general Causes*, we
 E shall,

shall, lastly, enquire into the *Power and Use of Mixture*; or, into what it can *Do and Teach*. And I shall Instance in six particulars.

First, To Render all Bodies Sociable, whatsoever they be.

Secondly, To Make Artificial Bodies in Imitation of those of Natures own production.

Thirdly, To Make or Imitate the sensible Qualities of Bodies; as *Smells, and Tasts*.

Fourthly, To Make or Imitate their Faculties.

Fifthly,

Fifthly, It is a *Key*, to discover the *Nature* of Bodies.

Sixthly, To discover their *Use*, and the *Manner* of their *Medicinal Operation*.

Instance I.

FIRST, To render all Bodies *Sociable* or *Mingleable*: as *Water* with *Oyl*, *Salt* with *Spirit*, and the like. For *Natural* and *Artificial Mixture*, are the same; as we have before proved. If therefore *Nature* can do it, as we see in the *Generation* of bodies she

E 2 doth,

doth; 'tis likewise in the *Power of Art* to do it.

And for the doing of it, two *general Rules* result from the *Premisses*, *sc.* The *Application of Causes*, and the *Choice of Materials*. As for the *Causes*, they are such as I have now instanc'd in. And for the *Application* of them, I shall give these *two Rules*.

First, That we tread in *Natures* steps as near as we can; not only in the *application* of such a *Cause*, as may be most
pro-

proper for such a *Mixture*; but also in allowing it *sufficient time* for its effect. For so we see *Nature* her self, for her more *perfect Mixtures*, usually doth. She maketh not a *Flower*, or an *Apple*, a *Horse*, or a *Man*, as it were in a *moment*; but all things *by degrees*; and for her more *perfect and elaborate Mixtures*, for the most part, she requireth *more time*. Because all such *Mixtures* are made and carri'd on *per minima*; and therefore require

a greater time for the completing of them.

A *second Rule* is, Not only to make a due *Application* of the *Causes*; but sometimes to *Accumulate* them. By which means, we may not only *Imitate Nature*, but in some cases go beyond her. For as by adding a *Graft* or *Bud* to the *Stock*, we may produce *Fruit* sooner, and sometimes better, then *Nature* by the *Stock* alone would do : So here, by *accumulating* the *Causes*

Causes of Mixture; that is, by joyning *three*, or *four*, or *more* together; or by *applying more* in some cases, where *Nature* applyeth *fewer*; we may be able to make, if not a more *perfect*, yet a far more *speedy Mixture*, than *Nature* doth. As by joyning *Compression*, *Heat*, and violent *Agitation*, and so continuing them all together, by some means contrived for the purpose, for the space of a *week*, or *moneth*, or *longer*, without

cessation. Which may probably produce, not only *strange, but useful effects*, in the *Solution* of some, and the *Mixture* of other Bodies. And may serve to *mix* such Bodies, as through the *small number* of their *congruous* parts, are hardly *mingleable* any other way. *Agitation* being, as carrying the *key* to and fro, till it hit the *lock*; or within the *lock*, till it hit the *wards*.

Secondly, For the Choice of
Ma-

Materials, if they are not *immediately*, that is, of themselves, *mingleable*; we are then to turn one *species* of *Mixture* into a *Rule* ; which is, To mix them by *mediation* of some *third*, whether more *simple* or *compounded* body, which may be congruous *in part* to them *both* : as *sulphurious Salts* are to *Water* and *Oyl*; and are for that reason *mingleable* with either of them.

Or, By any two congruous

E 5

Bo.

Bodies, which are also, *in part*, congruous to *two others*: and other like ways. Whereby the *parts* of Bodies, though never so *heterogeneous*, may yet be all *bound* and *lock'd* up together. Even as *twenty keys* may be *united*, only by *uniting* the *two Rings* whereon they hang.

The consideration of these things, have put me upon making several *Experiments*, for the *Mingling* of *heterogeneous Bodies*. I shall give two
Ex-

Examples of tryal ; the one upon *fluid*, the other upon *consistent*, Bodies.

For the *first*, I took *Oyl* of *Anise-seeds*, and powring it upon another Body; I so order'd it, that it was thereby turned into a perfect *milk-white Balsam*, or *Butter*. By which means the said *Oyl* became *mingleable* with any other *Liquor*, *Oyl*, *Wine*, or *Water*; *easily*, and *instantaneously* dissolving therein, in the form of a *Milk*. And *note*, That this
is

is done, without the *least alteration* of the *smell, taste, nature* or *operation* of the said *Oyl*.

By somewhat the like means, not only *Oyl* of *Anise-seeds*, but any other *stillatitious Oyl*, may be transformed into a perfect *milk white Butter*; and in like manner be *mingled* with *Water* or any other *Liquor*. Which is of *various use* in *Medicine*; and what I find oftentimes very convenient and advantageous to be done.

A-

Again, Not only *fluid* but *consistent* bodies, which of themselves will *mix* only with *Oyl*; by due *mixture* with other bodies, maybe render'd *easily* dissoluble in *Water*; as may *Rosin*, and all *resinous* and *friable* Gums. As also *Wax*; and this without changing much of their *Colour*, *Tast* or *Smell*. Whereof likewise, whatsoever others may do, the *Physician* may make a manifold *Use*.

In-

Instance II.

BY *Mixture* also, we may be taught to *Imitate* the *Productions* of *Nature*. As to which, from what we have before said of *Mixture*, we may conclude; That there is no *generation* of *Bodies unorganical*, but what is in the *power* of *Mixture* to *imitate*. As of *Animals*, to *Imitate* *Blood*, *Fat*, *Chyle*, *Spittle*, *Flegm*, *Bile*, &c. Of *Vegetables*, to *Imitate* a *Milk*, *Mucilage*, *Rosin*, *Gum*, or *Salt*. Of *Minerals*,

rals, to Imitate *Vitriol*, *Allom*, and other *Salts*; as also *Metals*, and the like.

I do not say, I can do all this : but if upon good *premisses* we may conclude this may be done ; it is one step to the doing of it. But I will also give an *Instance* of somewhat that may be done in every *kind*. And

1. *First*, For the *Imitation* of an *animal body*, I will instance in *Fat*. Which may be made thus ; Take *Oyl Olive*,

live, and powr it upon high *Spirit of Nitre*. Then *digest* them for some days. By degrees, the *Oyl* becomes of the colour of *Marrow*; and at last, is *congealed*, or hardned into a *white Fat* or *Butter*, which *dissolveth* only by the *fire*, as that of *Animals*.

In converting *Oyl* thus into *Fat*, it is to be *noted*, That it *hardens* most upon the *exhalation* of some of the more *Sulphureous* parts of the *Spirit of Nitre*. Which I effected, well.

well enough for my purpose, by unstopping the glass after some time of *digestion*; and so suffering the *Oyl* to *dissolve* and *thicken* divers times by successive heat and cold.

Hence, The true *Congeating Principle*, is a *Spirit of Nitre* separated from its *Sulphur*. For the better doing whereof, the *Air* is a most commodious *Menstruum* to the said *Spirit of Nitre*.

Whence also, if we could
pro-

procure such a *Spirit of Nitre*, we might congele *Water* in the midst of *Summer*. We might also refrigerate *Rooms* herewith *artificially*. And might *Imitate* all frosty *Meteors*. For the making of *Fat*, is but the *Durable Congelation* of *Oyl*; which may be done without *frost*, as I have shew'd how.

Hence also it appears, That *Animal Fat* it self, is but the *Curdling* of the *Oily* parts of the *Blood*; either by some of
its

its own *Saline* parts ; or by the *Nitrous* parts of the *Air* mingled therewith.

Hence likewise it is, That some *Animals*, as *Conies*, and *Fieldfares*, grow fatter in frosty weather: the *oily* parts of the *blood*, being then more than ordinarily *coagulated* with a greater abundance of *nitrous* parts received from the *Air* into their *bodies*.

For the same reason it is, That the *Fat* of *Land-Animals* is *hard*; whereas that of
Fish

Fish is very soft, and in a great part runs to *Oyl*, *sc.* Because the *Water*, wherein they live, and which they have instead of *breath*, hath but very few *nitrous* parts in it, in comparison of what the *Air* hath.

2. For the *Imitation* of a *Vegetable Body*, I will give three *Instances*; In *Rosin*, *Gum*, and a *Lixivial Salt*. The *first* may be made thus; Take good *Oyl* of *Vitriol*, and drop it upon *Oyl* of *Anise-seeds*; and they will

will forthwith *incorporate* together; and by degrees, will *harden* into a *perfect Rosin*; with the *general* and *defining Properties* of a *truly Natural Resinous Gum*. Being not in the least *dissoluble* in *Water*; or at least, not any more, than any natural *Rosin* or *Gum*: yet very *easily* by *fire*: as also highly *inflammable*: and exceeding *friable*.

Although this *artificial rosin*, be the result of *two Liquors*, both which very strongly affect

affect the *Sense*: yet being well washed from the *unincorporated parts*, (which is to be done with some care) it hath scarce any *Tast* or *Smell*.

The *Concentration* of these two *Liquors*, is likewise so *universal*; that the *Rosin* is not made by *Precipitation*, but almost a *total Combination* of the said *Liquors*; and that with scarce so much, as any *visible fumes*.

Again, Having taken a certain *Powder* and a *Saline Liquor*,

quor, and mixed them together in a bottle, and so *digested* them for some time; the *Powder* was at last transmuted to a perfect *Oily Gum*; which will also *dissolve* either in *Oyl*, or in *Water*; in the self same manner, as *Golbanum*, *Ammoniac*, and the like will do.

And *Lastly*, A *Lixivial Salt* may be *imitated* thus; Take *Nitre*, *Oyl of Vitriol* and high *Spirit of Wine*, of each a like quantity. Of these *three Bodies*,

dies, not any *two* being *put together* ; that is to say, neither the *Nitre* with the *Oyl*, nor the *Oyl* with the *Spirit*, nor the *Nitre* with the *Spirit*; will make the *least ebullition* : yet all *three mingled together*, make a very *conspicuous one*. The *Spirit of Wine* being as the *Sulphur*; and so that, and the *Nitre* together, standing, as it were, in the stead of an *Alkalizate*, that is, a *Sulphurious Salt*, against the *Oyl of Vitriol*. Divers
other

other *Experiments* I can shew of the like nature.

3. In the last place, for the *Imitation* of a *Mineral Body*, I will instance in *two*, *sc. Nitre* and *Marine Salt*; if I may have leave to reckon them amongst *Mineral Bodies*. As for *Nitre*, by mixing of *four Liquors* together, and then setting them to *shoot*; I have obtained *Crystals* of *true* and *perfect Salt*; which have had much of a *nitrous taste*; and would be *melted* with a *gen-*

F tle

the beat, as Nitre is; and even as easily as Butter it self: I mean, not by the addition of any sort of Liquor, or any other body, to dissolve it; but only by the fire.

And as for a Sea-Salt, that I might Imitate Nature for the making hereof, I consider'd, That the Salt so called, was nothing else but Animal and Vegetable Salt, freed from its true Spirit and Sulphur, and some Saine particles, specifically Animal

mal or *Vegetable*, together with them. For both *Animal* and *Vegetable* bodies being continually carried by all *Rivers* into the Sea; and many likewise by *Shipwrack*, and divers *other* ways, *immersed* therein: they are at last *corrupted*, that is, their *Compounding* parts are *opened* and *resolved*. Yet the *Resolution* being in the *Water*, is not made *precipitately*, as it is in the *Air*; but by degrees, and very *gently*.

Whence the *Sulphurous*,
and other more *Volatile*
parts, in their *avolation*,
make not so much *hast*, as
to carry the more *fixed Sa-*
line parts along with them;
but leaveth them behind in
the *Water*, which *imbibeth*
them, as their proper *Men-*
struum.

And the *Imitation* of *Na-*
ture herein, may be per-
formed thus; Put as much
of a *Lixivial Salt* as you
please, into a wide mouth'd
bottle,

bottle, and with fair *Water* make a strong *Solution* of it; so as some part thereof may remain *unresolved* at the bottom of the bottle. Let the bottle stand thus for the space of about half or three quarters of a year, all the time unstopped. In which time, many of the *Sulphurous* and other more *Volatile* parts gradually flying away; the top of the *unresolved Salt* will be *incrustate*, or as it were *frosted*

F 3 over,

over, with many small and hard *Concretions*, which for their nature, are become a true *Sea-Salt*. Whereof there is a double proof; *First*, In that most of the said *Concretions* are of a *Cubical*, or very like *Figure*. Especially on their *upper* parts; because having a *fixed* body for their *basis*, their *under* parts, therefore, contiguous thereto, are less *regular*. Whereas the parts of *Salt* in the Sea, being environed

roned on all sides with a *fluid*; their *Figure* is therefore on all sides *regular*. Secondly, In that a strong *Acid Spirit* or *Oyl* being powred upon a *full body'd Solution* hereof; yet it maketh herewith no *Ebullition*; which is also the *property* of *Sea.Salt*. And thus much for the more *general Imitation* of *Bodies*.

Instance III.

FROM the aforesaid
Premisses, and by the
 aforesaid *Means*, there is no
 doubt to be made, but that
 also the other *sensible Quali-*
ties of Bodies may be *Imita-*
ted, as their *Odours* and *Tasts*.
 And that not only the ge-
 neral ones, as *Fragrant*, or
Astringent : but also those
 which are *specifical* and pro-
 per to such a *species* of Bo-
 dies.

dies. Thus, for *example*, by *mixing* several *Bodies* together, in a due *proportion*, I have *Imitated* the *Smells* of *divers Vegetables*; as of *Tansy*, of *Lignum Rhodium*, and *others*. And I conclude it *feasable*, To *Imitate* the *Tast* or *Smell* of *Musk*, or *Ambergreece*, or *any other body* in the world.

Instance IV.

HENCE also we may
be *Taught*, How to I-
mitate the *Faculties*, as well
as other *Qualities* of Bodies.
The reason is, because even
these have no dependance
upon any *substantial Form*;
as in the first *Part* of my
last *Book* of the *Anatomy* of
Vegetables, I think, I have, in
a few lines, clearly made
out : but are the meer re-
sult

sult of *Mixture*; effected by the same *Causes*, whether in *Nature* or *Art*; as also in the *premisses* of this *Discourse* hath been shew'd.

Instance V.

FR O M whence, again, it is likewise a *Key* to *Discover* the *Nature* of *Bodies*. For how far soever we can attain to *Mingle*, or to *Make* them, we may also know *what they are*.

For

For Bodies are *mingleable*, either of *themselves*, or by some *third*. As to those which *mingle of themselves*, we may certainly conclude, That there is a *congruity* betwixt them, in some respect or other. So upon various tryals I find, that *Essential Oyls* do more easily *imbibe* an *Acid*, then an *Alkaly*. Whence it is evident, That there is some *congruity* and *similitude* betwixt *Essential Oyls*, and an *Acid*, which
there

there is not betwixt the
said *Oyls* and an *Alkaly*.

As to those that mingle
only by some *third*; we may
also certainly conclude,
That though the *two ex-*
trems are *unlike* ; yet that
they have both of them a
similitude to or *congruity* with
that *third*, by which they
are *united*.

Moreover, We may make a
Judgment from the *Manner*
or *Degree* of *Mixture*. Thus
the *Acid Spirit* of *Nitre*, as is
said,

said, will coagulate Oyl-Olive,
 and render it consistent.
 Whence it might be
 thought, That any other
 strong *Acid* will do the like;
 and that therefore, there is
 no great difference in the
Nature of the said *Acid Li-*
quors. But the contrary
 hereunto, is proved by *Ex-*
periment. For having digested
 the same Oyl, in the same
manner, and for a much
 longer time, with strong Oyl
 of Sulphur; although it
 thence

thence acquired some change of *Colour*, yet not any *Consistence*.

Again, Because the said *Spirit of Nitre* coagulates *Oyl of Olive*; it might be expected, it should have the same effect, upon *Oyl of Anise-seeds*; or, at least, that if other *Acids* will coagulate *Oyl of Anise-seeds*, that this should do it best. But *Experiment* proveth the contrary. For of all I have tryed, *Oyl of Vitriol* is the only
Acid

Acid that doth it *instantaneously*. *Oyl* of *Sulphur*, if very strong, will do it; but not so soon, nor so much. *Aqua fortis*, and *Spirit* of *Salt*, for the present, do not at all touch it. And *Spirit* of *Nitre* it self will not coagulate it, under eight or ten hours at least.

In-

Instance VI.

LASTLY, and consequently, It is a Key, To Discover the Medicinal Use and Operation of Bodies. Thus, for example, by the Imitation of Rosins and Resinous Gums, we certainly know what all of them are, and when, and wherefore to be used. For what are Mastick, Frankin-

kincense , *Olibanum* , *Benzoin* , and other like *Rosins* , or *Resinous Gums* , for their *principal* and *predominant* parts , that is , *qua Rosins* ; but Bodies resulting from *Natural* , in like manner, as I have shewed , they may be made to result, from *Artificial Mixture* ? That is to say , the *Oleous* , and *Acid* parts of *Vegetables* , being both *afused* and *mingled* together,

ther, *per minima*, in some one *Vessel* of a *Plant*, they thus *incorporate* into one *consistent* and *friable* body, which we call *Rosin*.

Now from hence it is, that the said *Rosins*, and *Resinous Gums*; as also *Amber* and *Sulphur* for the same reasons; are of so great and effectual *Use* against most *thin* and *salt Rheums*; *sc.* as they are *Acido-oleous*

oleous Bodies. For by their *Acid* parts , which in all these Bodies are exceeding *copious* , they *mortifie* and *refract* those *salt* ones which feed the *Rheum*. And by their *oleous* parts , the same *salt* ones are also *Imbibed*. Whence , they are all , in some degree, *incorporated* together ; that is , the *Rheum* is *thickened* : which is the desired *effect*.

Whereas,

Whereas, on the contrary, if the *Cough* proceed not from a *thin* and especially a *salt Rheum*, but from a *Viscous Flegm*; the use of *many other Bodies*, which are also more *oleous*, and abound not so much with an *Acid* as *these* do, especially *some* of them, is more proper: such as *these*, in this case, proving sometimes not only *ineffectual*, but *prejudicial*.

Since

Since the very *Cause* of the said *Viscousness* of *Pblegm*, is chiefly some great *Acidity* in the *Blood*, or in some other *part*; as may be proved by divers arguments.

Many more *Instances* might be hereunto subjoyned: and may hereafter be offered to the acceptance of such, who are inquisitive into *matters* of this *Nature*. If I shall not herein anticipate, or
re-

reiterate the *Thoughts* and *Observations*, of those two accurate and *Learned Persons* Dr. *Willis*, and Dr. *Walter Needham*, as to what the one hath already *published*, and both have put us in *expectation* of. But the *Instances* already given, are sufficient to evidence what I have said. And, I hope, this present *Discourse* to prove, in some measure, thus much ;
 That

That *Experiment* , and
the *Common* *Notions* of
Sense are *prolifick* ; and
that nothing is *barren* ,
but *phancy* and *imagina-*
tion.

F I N I S.

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